CLAIM AMENDMENTS

1. (Currently amended) A method for etching a through via on a wafer of semiconductor material, wherein the wafer has a front side surface and a backside surface, comprising:

applying a layer of photoresist material to the backside surface of the wafer;

exposing the layer of photoresist to a light source, wherein the developed photoresist is removed to form at least one via in the remaining photoresist layer;

baking the remaining photoresist layer in order to harden the remaining photoresist layer, wherein the baking of the remaining photoresist layer comprises a first heating step wherein the remaining photoresist layer is heated at a temperature of about 130°C. to about 135°C. for about one hour, and a second heating step wherein the remaining photoresist layer is heated at a temperature of about 180°C. to about 190°C. for about one hour, and wherein the use of the first heating step and the second heating step avoids thermal shock of the photoresist layer; and

gas plasma etching the semiconductor material adjacent to the at least one via to form a through via between the backside surface and the front side surface of the wafer.

2. (Canceled)

3. (Original) The method according to claim 1, further comprising removing the hardened photoresist layer from the backside surface of the wafer, after the step of gas plasma etching the through via between the backside surface and the front side surface of the wafer.

4. (Original) The method according to claim 3, further comprising applying a layer of conductive material to at least a portion of a surface of the through via, after the step of

removing the hardened photoresist layer from the backside surface of the wafer.

5. (Original) The method according to claim 1, wherein the plasma etching is conducted at a microwave power level in the range of about 700 watts to about 900 watts.

6. (Original) The method according to claim 1, wherein the plasma etching is conducted at a radio frequency power level in the range of about 300 watts to about 500 watts.

7. (Original) The method according to claim 1, wherein the plasma etching is conducted at a temperature in the range of about 130°C. to about 170°C.

8. (Original) The method according to claim 1, wherein the gas is a mixture of hydrogen gas, argon gas, boron trichloride gas, and hydrogen bromide gas.

9. (Previously presented) The method according to claim 8, wherein the hydrogen gas flows at a rate in the range of about 6 standard cubic centimeter per minute to about 10 standard cubic centimeters per minute.

10. (Previously presented) The method according to claim 8, wherein the argon gas flows at a rate in the range of about 15 standard cubic centimeter per minute to about 20 standard cubic centimeters per minute.

11. (Previously presented) The method according to claim 8, wherein the boron trichloride gas flows at a rate in the range of about 1 standard cubic centimeter per minute to about 5 standard cubic centimeters per minute.

12. (Previously presented) The method according to claim 8, wherein the hydrogen bromide gas flows at a rate in the range of about 50 standard cubic centimeters per minute

to about 80 standard cubic centimeters per minute.

13. (Original) The method according to claim 1, wherein the plasma etching is conducted at a pressure in the range of about 2 mTorr to about 8 mTorr.

14. (Original) The method according to claim 1, wherein the semiconductor material includes indium phosphide.

15. (Original) The method according to claim 1, wherein the semiconductor wafers are incorporated into devices selected from the group consisting of microwave circuits, millimeter wave circuits, and combinations thereof.

16. (Original) The method according to claim 1, wherein the semiconductor wafers have a final thickness in the range of about 25 to about 250 μm.